



Comment No.		Location	Text Highlighted	Comment	Response
Word	Reviewer				
1	NJDEP —	[General comment]	Lower Passaic River Study	General Comment: The sampling scheme is complex and is designed for efficiency of both sample collection and analysis to address multiple objectives. This has merit. However, a sample summary table to supplement Table 3 is needed to provide improved clarity of the proposed sampling and analysis program; please refer to comment 2 below.	A table has been added to the introduction section that summarizes the proposed sampling and analysis program.
2	EPA 1	[General comment]	Lower Passaic River Study	As discussed during a call on January 4, 2013, EPA is concerned that the collection of a single pore water sample from the RM 10.9 removal is not sufficient. EPA understands that the CPG is discussing how to address this issue internally and will respond to us shortly.	<p>The QAPP has been revised to address the following:</p> <ul style="list-style-type: none">Collection of forty-nine (49) 4” diameter sediment cores to increase the estimated pore water volume to provide for two samples. These additional sediment cores should provide sufficient sediment volume to prepare two composite pore water samples.If there is additional pore water remaining after the preparation of the primary composite samples; then the remaining volume will be used to generate “field duplicate” samples.The laboratories will be instructed to prepare “laboratory duplicate” samples with any pore water remaining after the analysis of the primary (and duplicate, if generated) samples. <p>The proposed core collection program will allow for the collection of additional cores to supplement the RM 10.9 Removal Area pore water characterization and will also generate samples for Quality Assurance/Quality Control (QA/QC) purposes.</p>
3	EPA 2	[General comment]	Lower Passaic River Study	EPA also understands that the CPG will be submitting a revised Worksheet 15 for this QAPP.	Worksheet 15 has been revised.
4	EPA 3	[General comment]	Lower Passaic River Study	Specific comments are provided below, though the QAPP will require additional review once the issues related to the previous two comments are addressed	Comment Noted.
5	NJDEP 16	[General comment]	Worksheet No.	All applicable Worksheets should be updated and amended to reflect the comments ultimately incorporated into Addendum D.	Comment Noted.



6	NJDEP 1	Sampling Objectives (pages 5 & 6 of 9)	Sampling Objectives	<p>In addition to the stated objectives, there are three additional data gaps that could be addressed by this addendum and should be considered: collection of representative near surface pore water (existing 0-2 ft cores) to provide project baseline conditions for comparison purposes in the long term monitoring program (Appendix K); collection of representative whole sediment samples from the 0-2 ft. interval for Dioxin/Furan analysis since this parameter is not covered under the TCLP testing; and collection of a few “co-located” cores matched to 2011 characterization work to determine degree, if any, of Hurricane Sandy impacts. These are addressed further in comments 3, 8 and 12, respectively, below.</p>	<p>Since the current “near surface” sediments (0-2 ft interval) will be dredged and replaced with clean cap materials, the CPG does not believe that pre-dredge pore water concentrations from this interval will be useful for purposes of long term monitoring.</p> <p>Pore water concentrations above the active layer of the sediment cap will be monitored for chemical breakthrough as part of the long term monitoring program. The elevated pre-remediation pore water concentrations are not relevant to the long term monitoring as lower concentrations, such as surface water concentrations, provide a more conservative criterion to establish chemical breakthrough.</p> <p>The collection and analysis of nearly 100 discrete sediment samples collected from within the Removal Area (0-2 ft interval) is sufficient to characterize dioxin/furan sediment concentrations for purposes of the TCRA.</p> <p>The collection and analysis of sediment samples to characterize the post-Sandy conditions is outside the scope of the RM 10.9 Removal Action AOC and the data quality objectives of this QAPP.</p>
7	NJDEP 2a	“Sediment Core Collection” and Table 2	Sediment Core Collection	<p>Observation: There appear to be inconsistent statements about the number of sediment core samples to be collected and the analyses to be performed on them. The Department’s understanding of what the sampling and analysis scheme appears to be is as follows: 25 sampling locations (as shown on Figure 1)</p> <p>12 locations of 4 ft cores – pore water collection for 1 composite analysis, sediment stabilization testing, Hg treatability studies</p> <p>0-2 foot depths of each core – TCLP analyses</p> <p>0-2 foot depths of each core – sediment stabilization studies</p> <p>2-4 foot depths of each core – pore water collection</p> <p>2-4 foot depths of 10 cores with highest [Hg] – Hg treatability study</p> <p>0-2 foot depths of 8 cores with highest [Hg] – no analyses</p> <p>13 locations – TCLP analyses</p> <p>0-2 foot depths of each core – TCLP analyses</p> <p>2-4 foot depths of each core – no analyses</p> <p>2a. Under the heading of Sampling and Analysis Approach, separate headings and descriptions for “Sediment Sampling” (exists) and “Pore Water Sampling” should be provided to improve understanding of the program.</p>	<p>The CPG has reviewed the sampling and analysis scheme and has not identified any inconsistencies with respect to the number of cores or the analyses to be performed on each core segment. However, the table will be modified to add clarification regarding these points to avoid future confusion.</p> <p>The text will be modified to provide clarification.</p>



8	NJDEP 2b	“Sediment Core Collection” and Table 2	47 sediment cores will be collected	2b. As mentioned under General Comments, a Sample Summary Table is needed to identify each selected sample location, number of discrete cores (4ft lengths) per location, number of intervals per core and the number and types of analyses per interval. For example, under Sediment Sampling, the text states that a total of “47 sediment cores will be collected”. It is not clear if these are physically distinct core samples (which would require duplicate core samples to be collected at some locations) or represent some combination of individual depth strata (0-2 foot and 2-4 foot depths) within each core sample collected at each location. Bullets #1 and #2 on page 5 of 9 imply that these will be physically distinct core samples. Improved clarification needed.	A table has been added to the introduction section that summarizes the proposed sampling and analysis program.
9	NJDEP 6	Table 2	Table 2	Related to comment 5 above, the QAPP should describe the objectives and scope of the sediment stabilization and Hg treatability studies.	The text has been modified accordingly.
10	NJDEP 5	Table 2	Table 2	This table indicates that the 2-4 foot depth strata of the sample cores will be stored for a potential Hg treatability study. However, Worksheet 14 – Sediment processing, states that the 0-2 foot depth strata will be handled this way. Clarification needed.	The typo in Worksheet 14 has been corrected; “0-2 ft interval” has been changed to “2-4 ft interval”.
11	NJDEP 3	Sediment Sampling, page 6-9, para. #2:	24 sediment core segments (2 – 4 ft interval)	This section states that “...24 core segments (2-4ft. interval) will be processed for pore water characterization....”. This implies 1 composite sample from 24 locations. Comment: Given the lack of any pore water data for this area, one pore water sample is considered insufficient for characterizing the potential variability in pore water across the removal area, taking into consideration both physical and chemical differences that may exist from north to south across the area to be capped. CPG should re-evaluate this approach and propose collection of pore water composite samples by grouping similar cores among the 24 target areas. This should result in a minimum of 4 – 6 composite samples, if possible, depending on analytical volume needs. These data can also become part of the baseline information needed for long term monitoring purposes (Appendix K).	The goal of the sediment sampling program is to obtain sediment samples with the highest COPC concentrations for purposes of developing a conservatively designed active layer of the cap. To accomplish this goal, the sampling program has been biased to target the 10 highest concentration locations for 2,3,7,8-TCDD, PCBs, and mercury. The sampling program is not intended to characterize the potential variability in pore water concentrations across the Removal Area. Moreover, as addressed in a previous comment, pre-remediation pore water concentrations are not relevant to the long term monitoring as lower concentrations, such as surface water concentrations, provide a more conservative criterion to establish chemical breakthrough.
12	NJDEP 4	Sediment Sampling, page 6-9, para. #2:	pore water	Related to comment 3 above, the procedure to form the pore water composite samples must be specified (for example, equal volume of pore water from each individual core sample used, or all of the pore water from each core sample?).	Two composite pore water samples will be collected, each representing an area weighted average of the region to be capped. In summary, multiple cores will be collected from each of 14 locations representing the maximum 2,3,7,8-TCDD and PCBs concentrations and 10 locations representing the maximum mercury concentrations. At each location, the cores will be divided equally and subsequently grouped to form two composite samples representing the same coverage area. The results will indicate if pore water concentrations from co-located cores are similar.



13	NJDEP 8	Sample Analysis (page 7 of 9)	Sample Analysis	As mentioned in comment 1 above, whole sample analysis for PCDDs/PCDFs using USEPA Method 1613b, or equivalent, is recommended for sediment characterization disposal purposes, since TCLP testing does not cover this key contaminant. Sample cores should be targeted for areas known/expected to have the highest dioxin TEQ concentrations based on existing data. If sediment volumes permit, representative cores designated for TCLP analysis could be used for this purpose.	<p>The collection and analysis of nearly 100 discrete sediment samples collected from within the Removal Area (0-2 ft interval) is sufficient to characterize dioxin/furan sediment concentrations for disposal purposes. No further sampling of dioxin for the purposes of characterizing RM 10.9 Removal Area sediment is required.</p> <p>The current TCLP sampling program includes coverage of the Removal Area. Locations with the highest dioxin TEQ concentrations.</p>
14	NJDEP 9	Sample Analysis (page 7 of 9)	Sample Analysis	The QAPP states that “upon receipt of the sediment cores, ASL will process the core segments designated for pore water via centrifugation to separate the pore water from the sediment particles.” Centrifugation has several drawbacks, including typically higher chemical detection limits due to small volumes of pore water extracted, disruption of the integrity of the interstitial pore space and creation of conditions (e.g., altered redox or pH) whereby pore-water chemical form or speciation may be altered (ITRC 2011). However, for the current project, this method of pore water collection is acceptable. Sidenote for consideration: If these data will be used for baseline conditions (as suggested by the Department in comments 1 & 3 above) consideration should be given to how comparable the data generated from the proposed pore water collection method will be with future pore water collection and analysis for long term cap monitoring purposes.	<p>The sediment sampling program was designed specifically to obtain the necessary number of cores to generate the volume of pore water required for chemical analysis. The chemical detection limits will not be compromised.</p> <p>Pre-remediation pore water concentrations are being used to design the active layer of sediment cap but will not be directly employed for comparative purposes during the long term monitoring. Rather, pore water concentrations above the active layer of the sediment cap will be monitored for chemical breakthrough as part of the long term monitoring program. The elevated pre-remediation pore water concentrations are not relevant to the long term monitoring as lower concentrations, such as surface water concentrations, provide a more conservative criterion to establish chemical breakthrough.</p>
15	EPA 4	Introduction/ Page 8/ Tables 3 and 4	Table 3	Please provide TOC data associated with these cores.	TOC data have been added to Tables 3 and 4.
16	NJDEP 7	Sediment Core Location Selection, Table 4	Table 4	<p>The Department appreciates the level of detail and evaluation that went into the core selection process and generally agrees with the overall approach and outcome.</p> <p>Observation: The averaging process used has apparently resulted in the proposed core location with the 4th highest 2,3,7,8-TCDD concentration (based on existing data) not being included in the proposed sampling scheme. This was because the location with the 13th highest 2,3,7,8-TCDD concentration had the highest PAH concentrations (11B-0316). However, the 2,3,7,8-TCDD concentration at location 11B-0316 is substantially lower than that in the remaining “top ten” locations. Likewise, the sample location with the 10th highest total PCB concentration has not been included – in its place, the sample with the 15th highest concentration is proposed for use (11B-0344). However, the total PCB concentration at location 11B-0344 is substantially lower than that in the remaining “top ten” locations. Comment: It is recommended that additional samples are collected at the locations with the 4th highest 2,3,7,8-TCDD and 10th highest total PCB concentrations.</p>	The original sampling program optimized the selection of the maximum concentration locations for 2,3,7,8-TCDD, PCBs, and PAHs. For 2,3,7,8-TCDD and PCB, this approach resulted in 9 of the top 10 locations being selected for sampling. However, as requested in the comment, the two core locations 11B-0351 and 11B-0312, representing the “4th highest 2,3,7,8-TCDD and 10th highest total PCB” locations, respectively, will be added to the sampling program.



17	NJDEP 11	Worksheet #11, Step 2 - Principal Study Questions (page 32)	STEP 2 Identify the goals of the study	Question #2 is “Can the dredged material be disposed in a landfill without additional treatment?” However, the proposed Removal Action includes the stabilization of the dredged material with Portland cement (i.e. “additional treatment”). Is this referring to treatment beyond stabilization? Please clarify.	Question #2 has been changed to “Will the dredged sediment meet TCLP requirements?”
18	NJDEP 12	Worksheet 11, Step 2 – Decisions Statements on Collection of Representative Sediment Samples (pages 33-34) and Step 5 – Anticipated Data Evaluations (pages 36-37)	Decision Statements on Collection of Representative Sediment Samples	The comparisons are limited to the results of TCLP analyses. No bulk sediment chemistry analyses are included in the proposed work. To evaluate the representativeness of the proposed core samples, especially given possible changes in sediment characteristics due to Hurricane Sandy, bulk sediment chemistry analyses should be conducted on representative core samples/depth strata to be collected.	The sampling locations for collection of sediment for pore water extraction are co-located with previously characterized locations. In addition, the sampling program is biased to capture sediment from the exact same locations that have been previously identified as having the highest COPC concentrations No further sampling of dioxin for the purposes of characterizing RM 10.9 Removal Area sediment is required.
19	EPA 6	Worksheet 12; pages 1 through 6 of 6	Matrix Water	This worksheet includes field duplicates however QAPP Worksheet 11, Page 5 of 7, Section titled QA/QC Program states that “Field duplicates and equipment rinsate blanks will not be collected or analyzed.” Remove the field duplicate entries for consistency with worksheet 11.	Worksheet 11 has been updated to reflect that field duplicates will be prepared for analysis in the event that there is sufficient pore water volume available. Therefore no change has been made to Worksheet 12.
20	EPA 7	Worksheet 12; pages 4, 5 and 6 of 6	Equipment Rinsate Blank	These worksheets include an equipment rinsate blank which is not required per worksheet 11.	Performance criteria for equipment rinsate blanks have been deleted from Worksheet 12.
21	EPA 8	Worksheet 15; page 18 of 18	^d Note the PAHs in both the TCL SVOC and LRMS-SIM isotope dilution methods will both be reported separately.	Footnote d is not applicable since no TCL SVOC analysis is being performed.	Footnote d has been deleted.
22	NJDEP 13	Worksheet 18	Water Depth	should also identify those samples/depth strata to be used for the sediment stabilization and Hg treatability studies, as well as that the 0-2 foot depth strata at the 12 “pore water locations” will also be subject to TCLP analyses.	Worksheet will be updated accordingly.
23	NJDEP 14	Worksheet 19	Sample Size	This lists the minimum sample size for water analyses (pore water) as 2 liters for each of the organic contaminant analyses and 500 mL each for the Hg and methyl-Hg analyses. This sample size will require the collection of multiple core samples at each location. It is not clear if this has been adequately addressed; clarification recommended (related to comment 2).	The sediment sampling program was designed specifically to obtain the necessary number of cores to generate the volume of pore water required for chemical analysis.
24	NJDEP 15	Worksheet 20	Matrix	Please describe how the water “field quality control” samples be collected, and their relevance to the collection of sediment core samples. It is noted that Worksheet 28 does not include any of these as “QC Samples”.	Worksheet will be updated accordingly.



25	EPA 9	Worksheet 23; page 1 of 4	Modified for Project work? (Y/N)	The column titled, “Modified for Project Work? (Y/N)” has N in all entries but the prelude to the table states that the “The following is a list of the SOPs which are modified as described on this worksheet for the RM 10.9 QAPP Addendum. Refer to the RM 10.9 QAPP Worksheet #23 for other pertinent SOPs.” Please clarify the apparent discrepancy.	The “N” entries refer specifically to modifications of the laboratory SOPs. No changes were made to the laboratory SOPs. The SOPs included in Worksheet 23 were added to address the aqueous samples that were not part of the RM 10.9 QAPP. For clarification, the language has been changed to reflect the basis for adding the SOPs, “The following is a list of SOPs for aqueous samples, which were not included in the RM 10.9 QAPP.”
26	EPA 10	Worksheet 24; page 2 of 2	Mercury	Methyl mercury not included on table. Mercury and TOC were included even though there was no change from the CWCM QAPP.	QAPP D is an addendum to the RM 10.9 QAPP, not the CWCM QAPP, and therefore Mercury and TOC in aqueous samples must be included. Methyl mercury was inadvertently left out and has subsequently been added to Worksheet 24.
27	EPA 11	Worksheet 28; all pages [1to 12]	QC Sample Frequency/ Number	Please remove the field duplicate entries for consistency with Worksheet 11.	Worksheet 11 has been updated to reflect that field duplicates will be prepared for analysis in the event that there is sufficient pore water volume available. Therefore no change has been made to Worksheet 28.
28	EPA 13	Worksheet 28; pages 7, 9, and 11 of 12	Equipment Rinsate Blank	This worksheet includes an equipment rinsate blank which is not required per worksheet 11.	Equipment rinsate blanks have been deleted from Worksheet 28.
29	EPA 12	Worksheet 28; pages 8, 10 and 12 of 12	Analytical Group Metals: Methyl Mercury (total and dissolved)	These worksheets for mercury, methyl mercury, TOC, and DOC include PE samples however this is inconsistent with the other worksheets	PE samples have been deleted from Worksheet 28.
30	EPA 14	Worksheet 35; page 2 of 3	Field duplicate results	Remove field duplicate bullet Bullet related to radiochemical analysis should be removed Metals were not included in the list of analytes to be validated so the bullets related to ICS and ICP should be removed or clarified.	Worksheet 11 has been updated to reflect that field duplicates will be prepared for analysis in the event that there is sufficient pore water volume available. Therefore the field duplicate bullet has not been deleted. The bullet related to radiochemical analysis has been removed. Worksheet 35 states that “For all other parameters, 100% full validation (as appropriate to the analyses) will be performed on the first SDG.”, therefore the bullets related to ICS and ICP have not been deleted.
31	EPA 15	Worksheet 35; page 3 of 3; second to last paragraph	These will be limited to “J”, “UJ”, “K”, and “NJ”, as defined in the Region II validation SOPs.	Other validation qualifiers may apply such as “U”, and “R”.	Additional validation qualifiers have been added including “U” and “R”.
32	EPA 16	Worksheet 37; last section	field and/or laboratory duplicates	Remove field duplicate from the second to last sentence.	Worksheet 11 has been updated to reflect that field duplicates will be prepared for analysis in the event that there is sufficient pore water volume available. Therefore no change has been made to Worksheet 37.



33	NJDEP 10	Standard Operating Procedure for the Ex-Situ Extraction of Interstitial Water from Sediment Samples (Page 4 of 7)	Laboratory Standard Operating Procedures	The SOP states that the centrifuge speed will be “5,000 RPM.” USEPA 2001 recommends a centrifugation speed of 8,000-10,000 RPM. CH2M Hill should provide justification for the chosen centrifuge speed.	This issue has been brought to the attention of the two laboratories under contract to perform the centrifugation, ASL and Brooks Rand. Several other commercial laboratories have been contacted and supporting documents have been found that indicate sediments have been successfully processed for pore water extraction between 2,000 – 5,000 RPM. Brooks Rand noted that a speed of 8,000-10,000 RPM would likely destroy their ultra-clean centrifuge containers. The laboratories also noted that lower centrifugation speeds are accompanied by increased spin times to achieve the desired separation.
34	EPA 5	SOP No:XXX0#.01 Page 3, 7.0 (pdf page 107)	Laboratory Standard Operating Procedures	Specify materials to be used for centrifuge vessels. Provide data on MS/MSD recovery of target analytes for samples centrifuged using this material of construction on target sediments with similar concentrations as the RM 10.9 area.	Two laboratory SOPs have been added to Appendix A, which indicate the materials used for the centrifuge vessels and procedures to minimize or eliminate the potential for sample contamination and/or cross-contamination: 1) ASL Protocol for Centrifugation/Pore Water Sample Handling 2) Brooks Rand SOP #BR-0400 Decontamination of Containers and Sample Preparation Equipment

References provided by NJDEP

ITRC. 2011. *Incorporating Bioavailability Considerations into the Evaluation of Contaminated Sediment Sites*. Interstate Technology & Regulatory Council 444 North Capitol Street, NW, Suite 445, Washington, DC 20001.
<http://www.itrcweb.org/contseds-bioavailability/>.

USEPA. 2001. *Methods for Collection, Storage and Manipulation of Sediments for Chemical and Toxicological Analyses: Technical Manual*. EPA/823/B-01/002. Washington, D.C.: Office of Water.
http://www.nj.gov/dep/srp/guidance/srra/ecological_evaluation.pdf.